

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,003,023 B2  
APPLICATION NO. : 10/672259  
DATED : February 21, 2006  
INVENTOR(S) : Krone et al.

Page 1 of 17

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

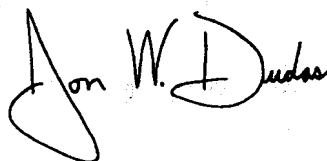
**THE TILTE PAGE, SHOWING AN ILLUSTRATIVE FIGURE, SHOULD BE  
DELETED AND SUBSTITUTE THEREFOR THE ATTACHED TITLE PAGE.**

**DELETE DRAWING SHEETS 1-15, AND SUBSTITUTE THEREFOR THE  
DRWAING SHEETS CONSISTING OF FIGS 1-15 AS SHOWN ON THE  
ATTACHED PAGES.**

column 26, line 64, delete "baffler" and insert --barrier--.  
column 26, line 65, delete "baffler" and insert --barrier--.  
column 27, line 6, delete "baffler" and insert --barrier--.  
column 27, line 9, delete "baffler" and insert --barrier--.  
column 27, line 12, delete "baffler" and insert --barrier--.  
column 27, line 13, delete "baffler" and insert --barrier--.  
column 27, line 15, delete "baffler" and insert --barrier--.  
column 27, line 17, delete "baffler" and insert --barrier--.  
column 27, line 18, delete "baffler" and insert --barrier--.  
column 27, line 21, delete "baffler" and insert --barrier--.  
column 27, line 23, delete "baffler" and insert --barrier--.  
column 27, line 26, delete "baffler" and insert --barrier--.  
column 28, line 1, delete "baffler" and insert --barrier--.  
column 28, line 3, delete "baffler" and insert --barrier--.

Signed and Sealed this

Fifteenth Day of May, 2007



JON W. DUDAS  
*Director of the United States Patent and Trademark Office*

(12) **United States Patent**  
Krone et al.

(10) Patent No.: **US 7,003,023 B2**

(45) Date of Patent: **\*Feb. 21, 2006**

(54) **DIGITAL ISOLATION SYSTEM WITH ADC OFFSET CALIBRATION**

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(73) Assignee: Silicon Laboratories Inc., Austin, TX (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 278 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: 10/672,259

(22) Filed: Sep. 26, 2003

(65) **Prior Publication Data**  
US 2004/0057524 A1 Mar. 25, 2004

**Related U.S. Application Data**

(60) Continuation of application No. 10/161,902, filed on Jun. 4, 2002, which is a division of application No. 09/035,180, filed on Mar. 4, 1998, now Pat. No. 6,442,213, which is a continuation-in-part of application No. 08/841,409, filed on Apr. 22, 1997, now Pat. No. 6,137,827, and a continuation-in-part of application No. 08/837,702, filed on Apr. 22, 1997, now Pat. No. 5,870,046, and a continuation-in-part of application No. 08/837,714, filed on Apr. 22, 1997, now Pat. No. 6,430,229.

(51) Int. Cl. **H04B 1/38** (2006.01)

(52) U.S. Cl. **375/219; 341/143**

(58) Field of Classification Search ..... 375/219-222, 375/259; 341/143

See application file for complete search history.

(56) **References Cited**  
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*Primary Examiner*—Kevin Burd

(74) *Attorney, Agent, or Firm*—O'Keefe, Egan & Peterman, LLP

(57) **ABSTRACT**

An improved digital capacitive isolation barrier system is provided that is suitable for use in a telephone or modem where the locally powered circuits must be effectively isolated from the public telephone system, while permitting data transfer across the barrier. In particular, an automatic ADC offset calibration system is provided for determining the magnitude of the ADC offset signal required in the system during a calibration operation, and for providing the calibrated ADC offset signal during normal operation of the isolation barrier system. A modified hybrid circuit is provided for isolating the system input from the telephone line during calibration, and for completing the calibration loop. Fixed bias signals are also provided for the ADC and for a DAC in the system. In a preferred embodiment, the ADC is located on the isolated side of the isolation barrier, while the integrator and register that determine and hold the offset signal are located on the powered side of the isolation barrier.

16 Claims, 15 Drawing Sheets

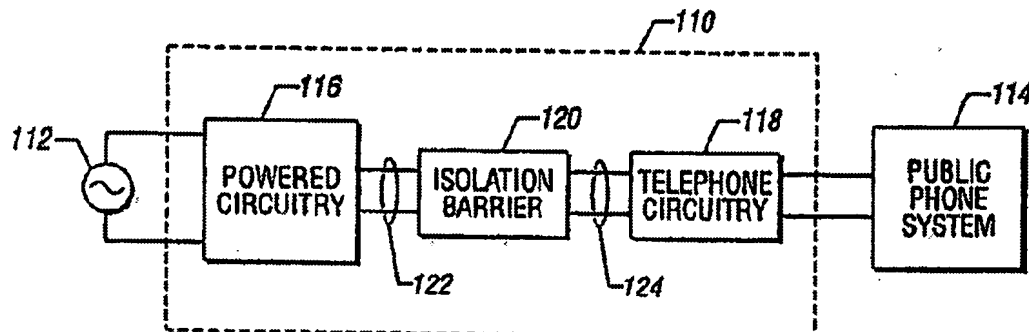


FIG. 1

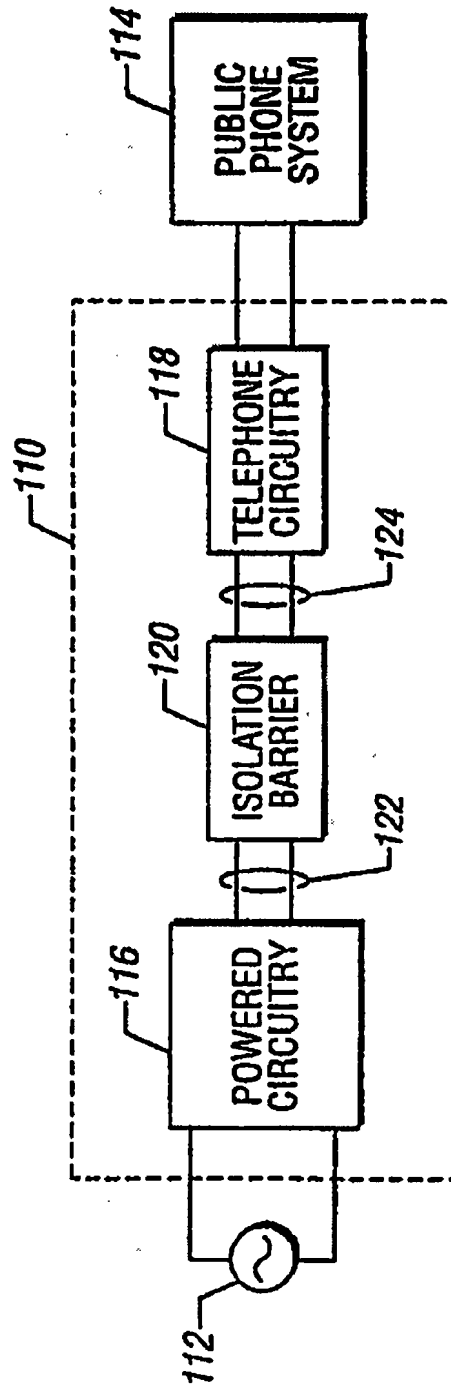
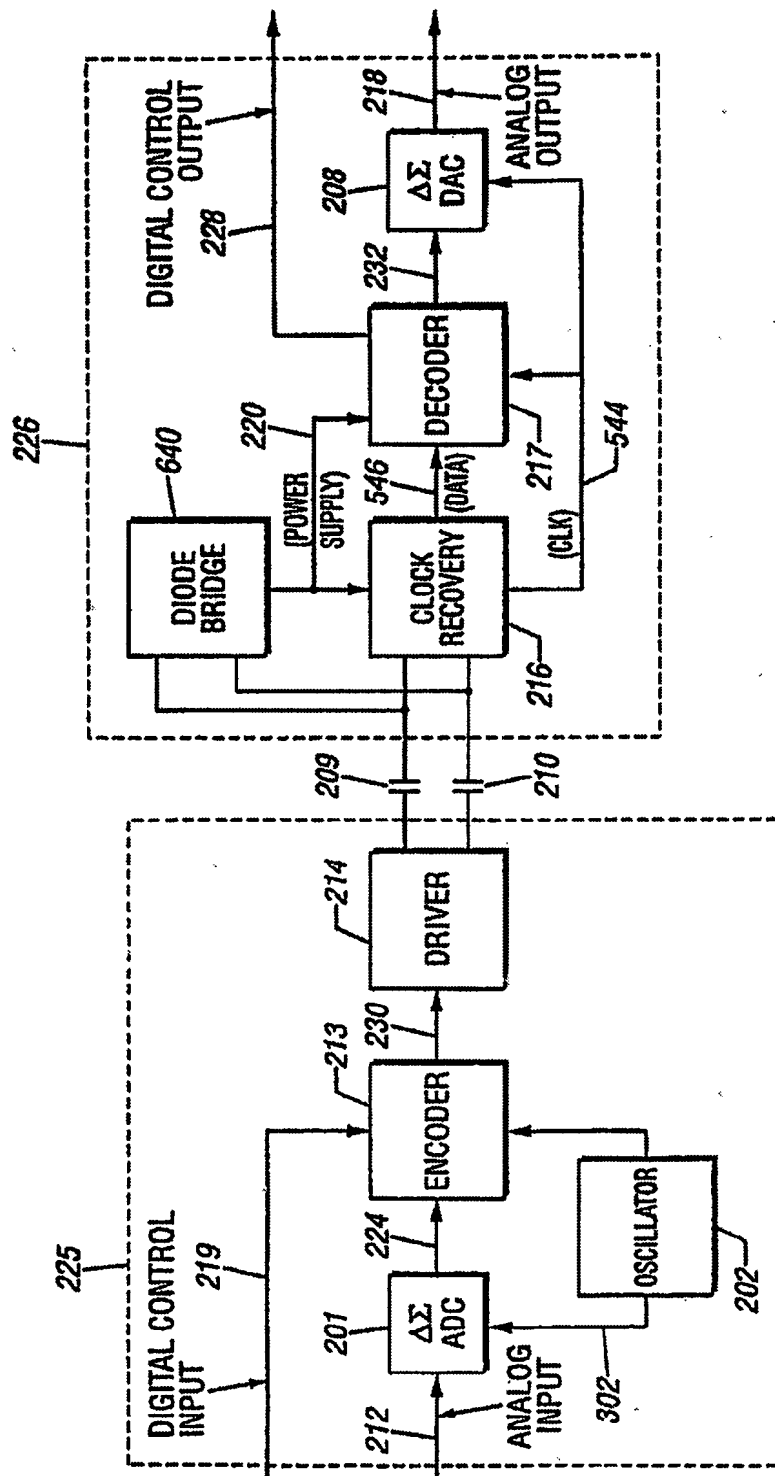
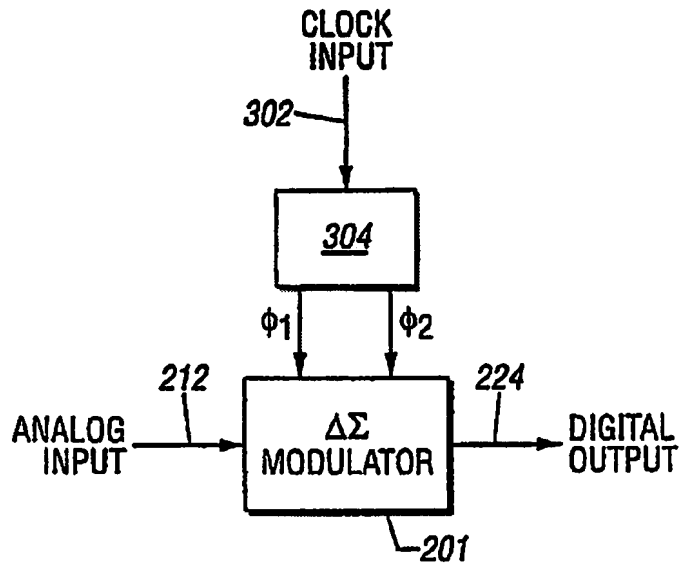
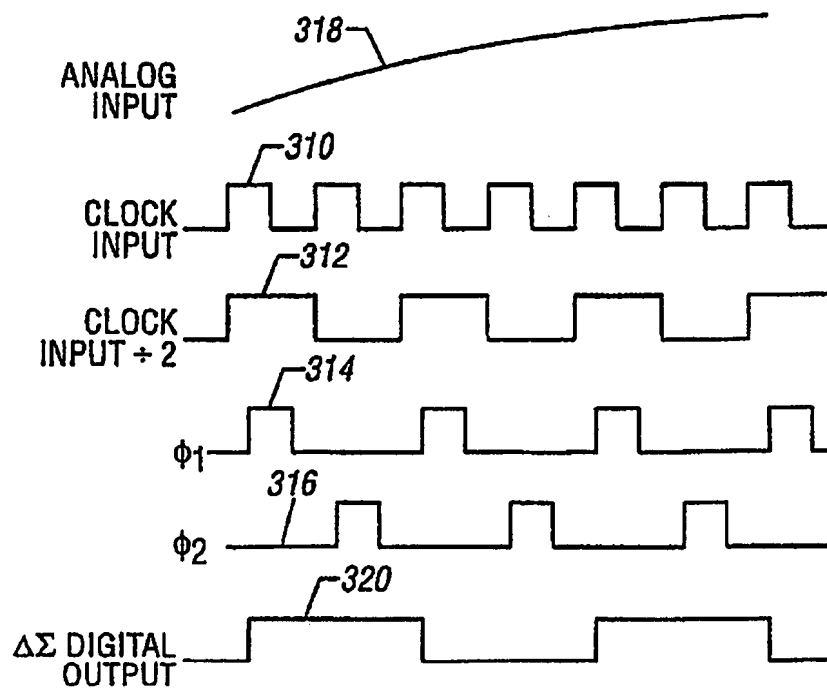
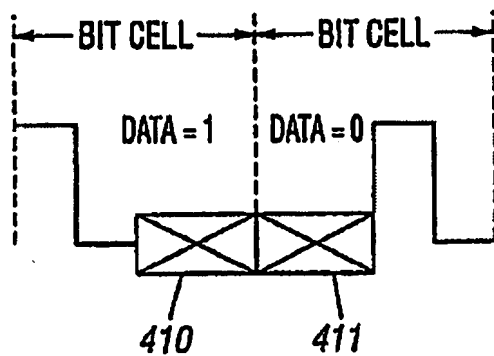


FIG. 2



**FIG. 3A****FIG. 3B**

**FIG. 4A**



**FIG. 4B**

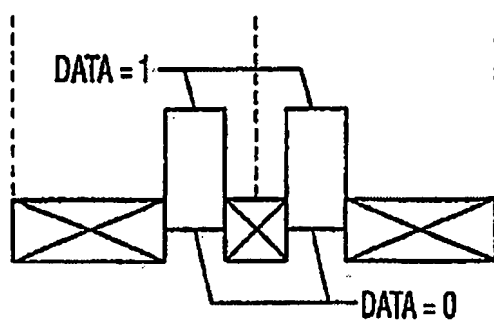
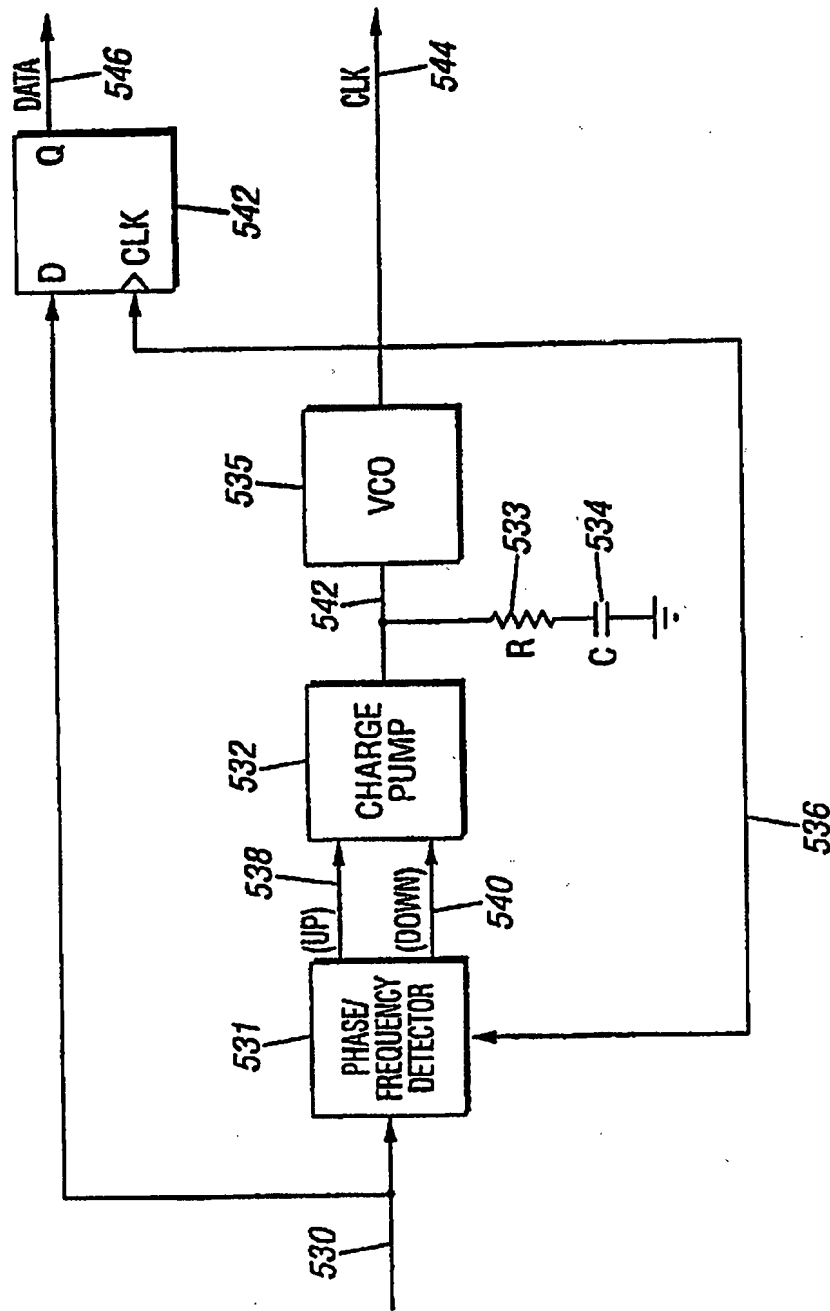


FIG. 5



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FIG. 6A

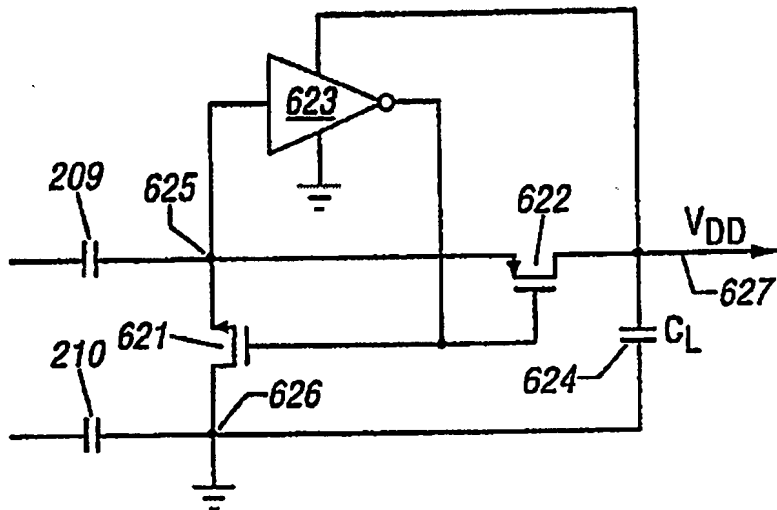
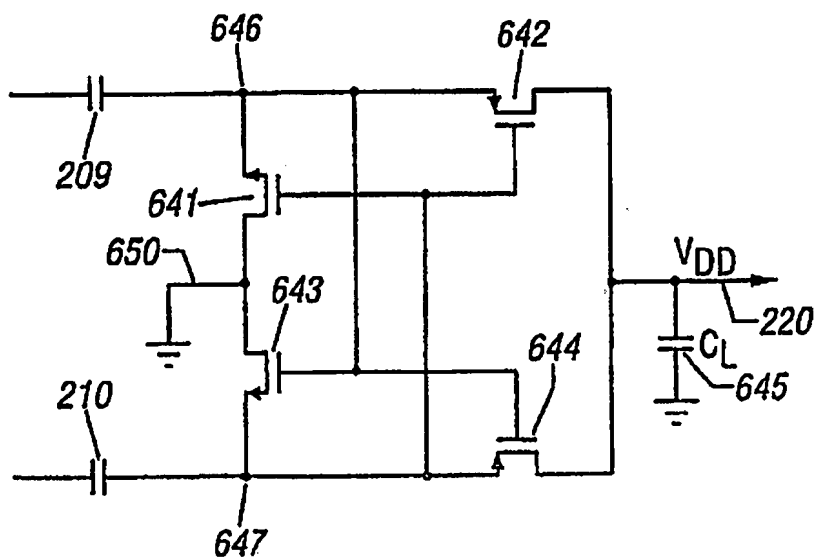


FIG. 6B





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FIG. 7

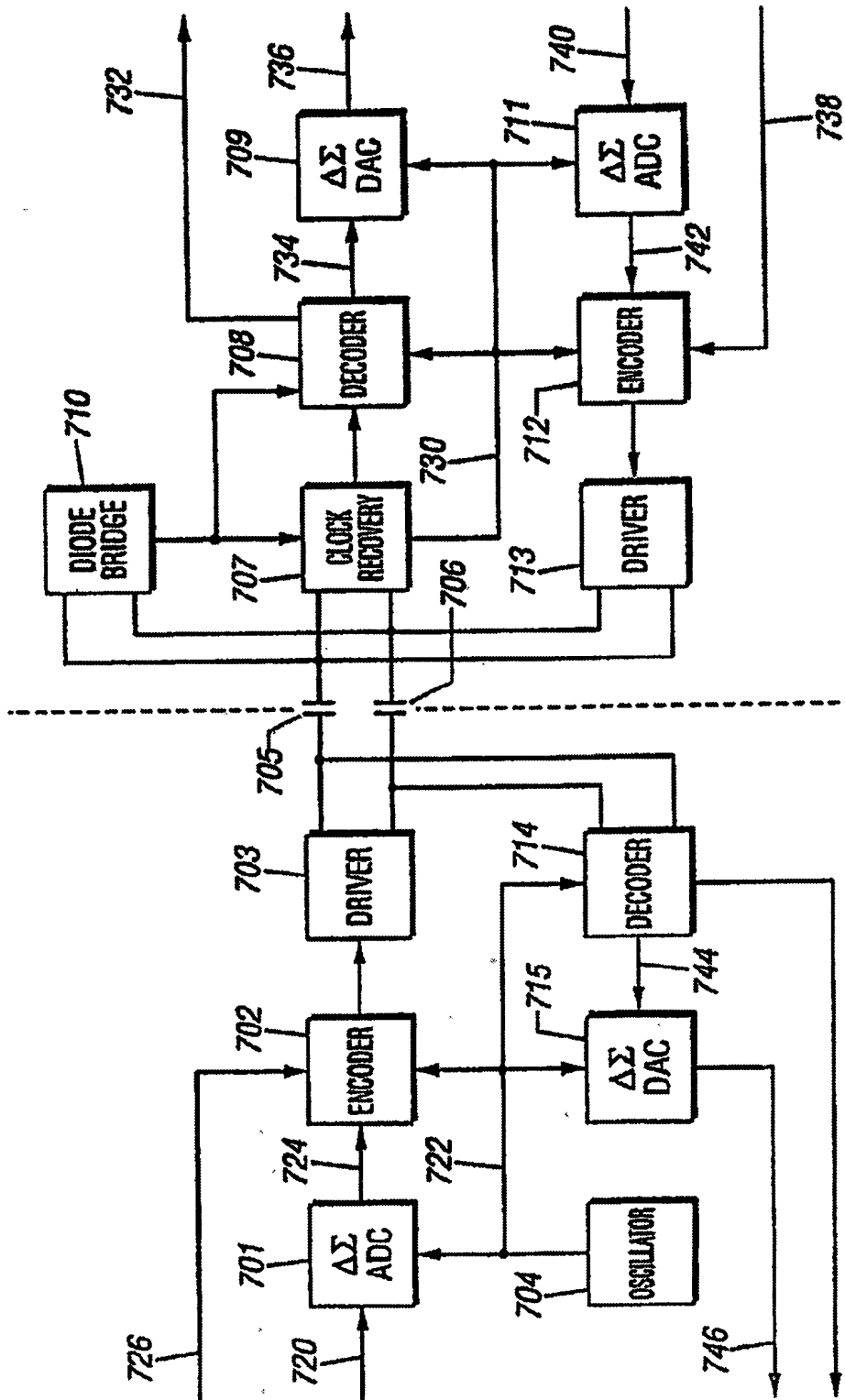


FIG. 8

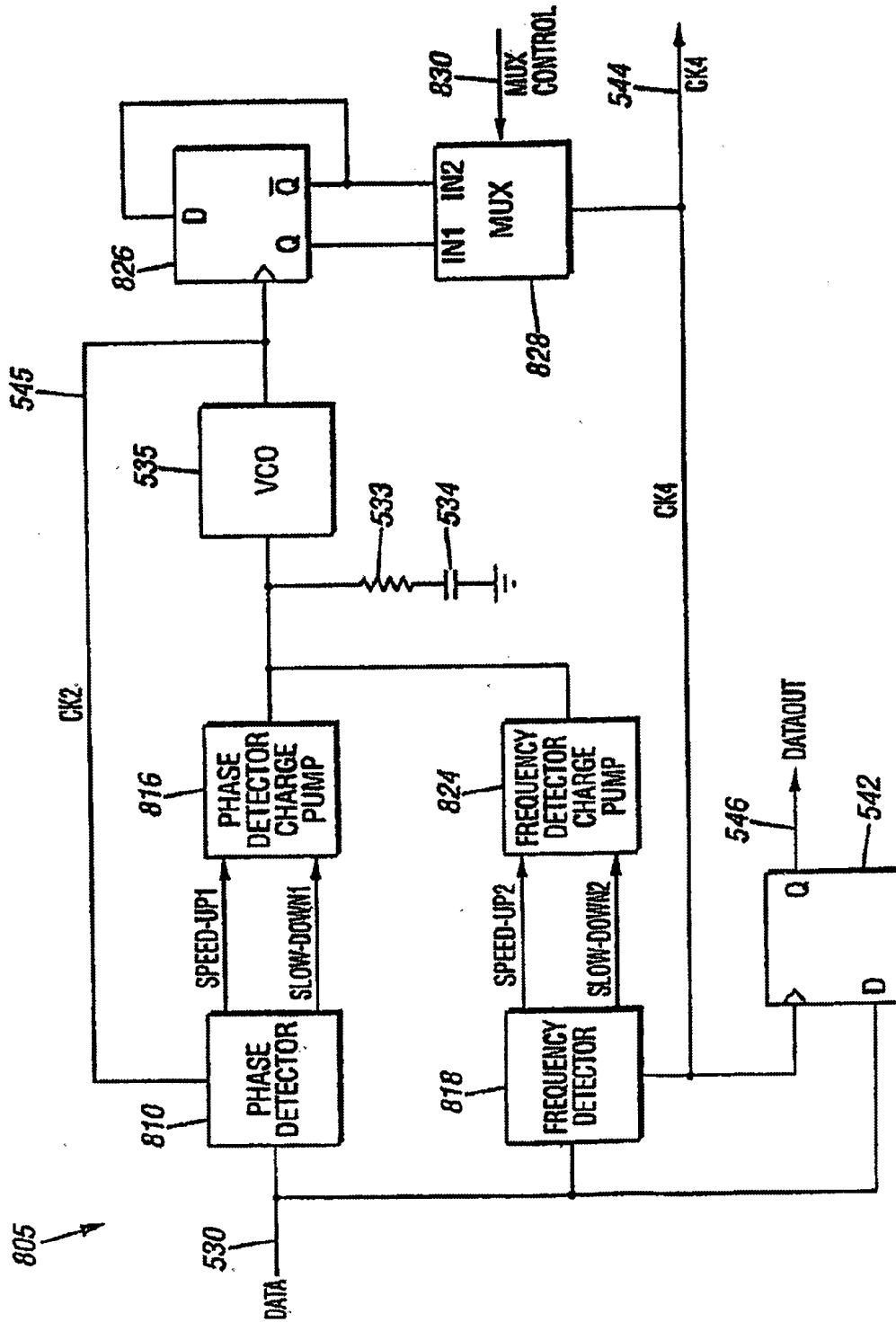
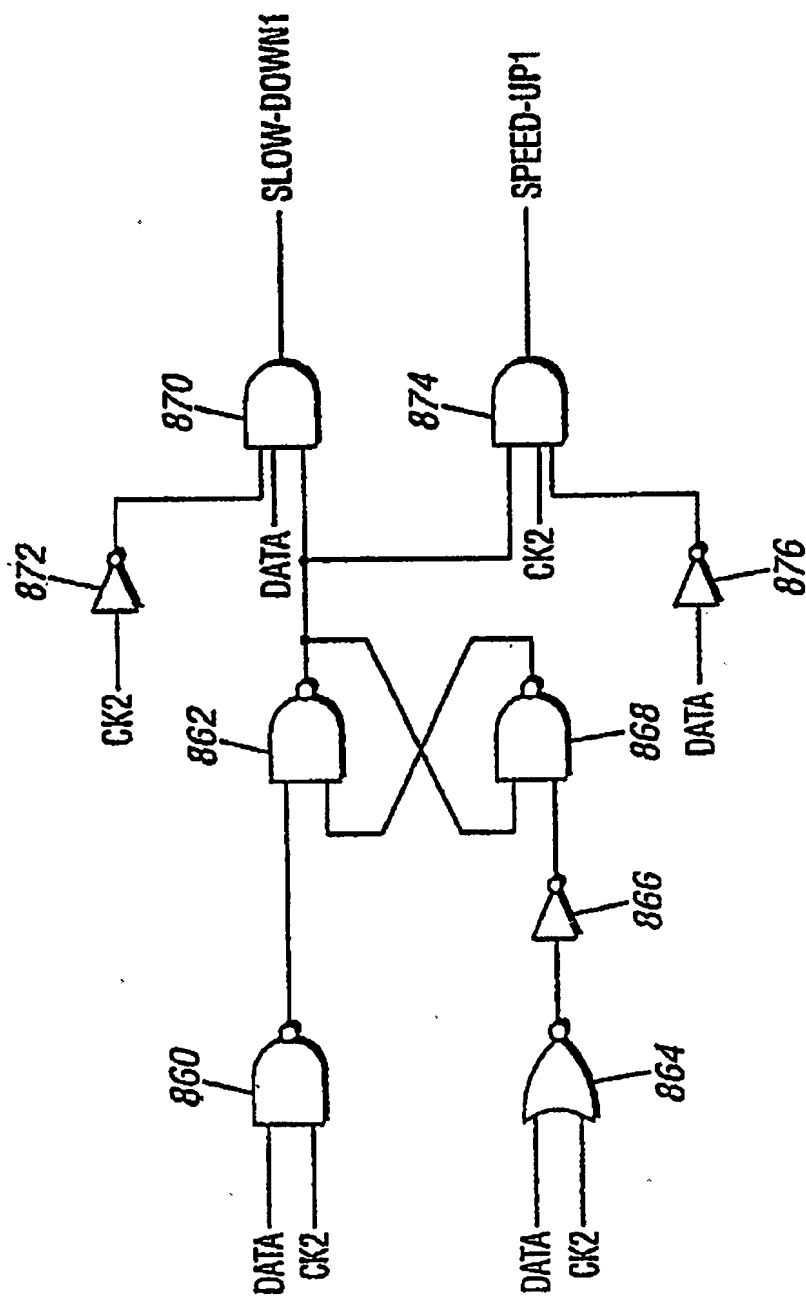


FIG. 9



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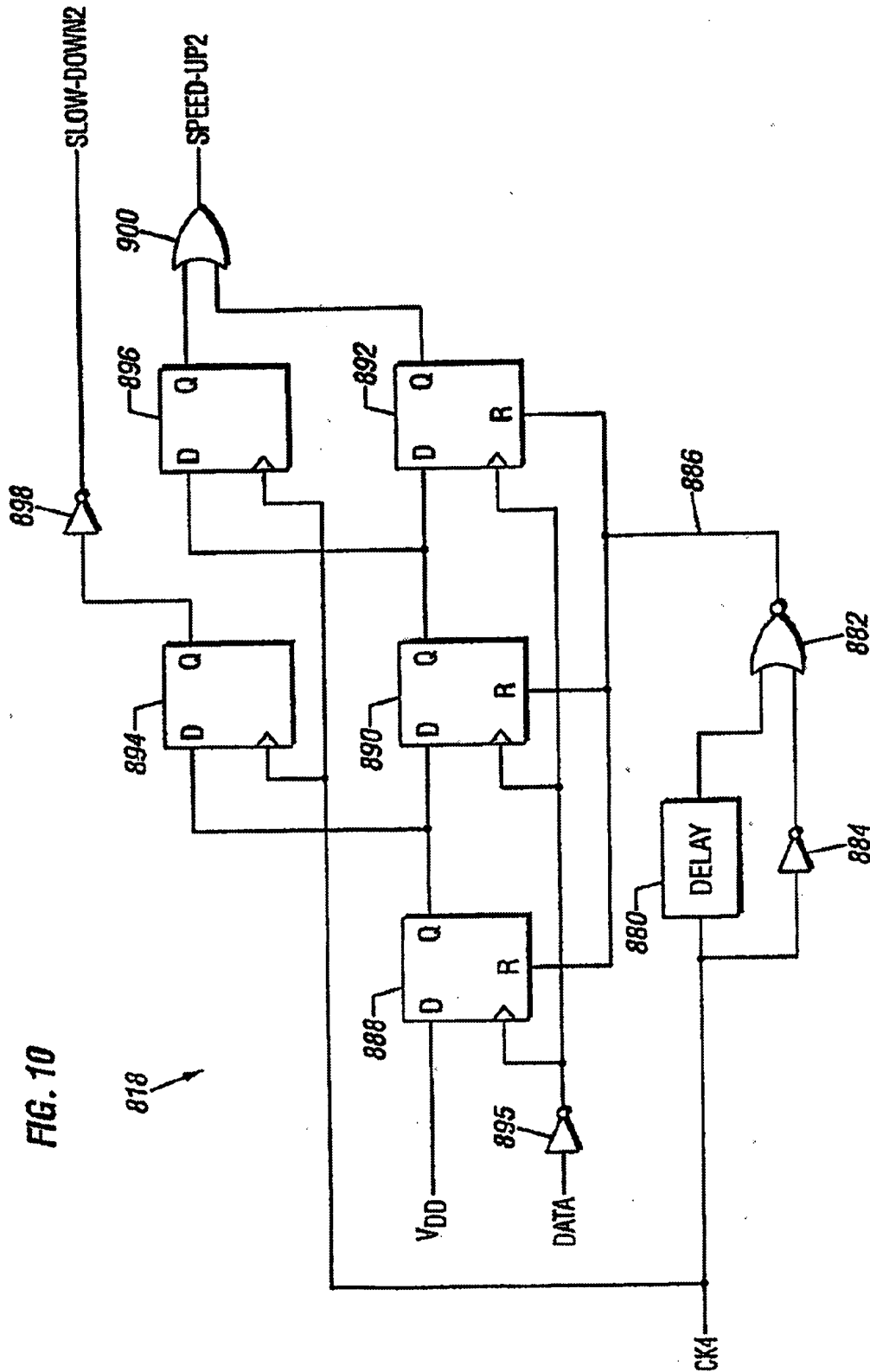


FIG. 11

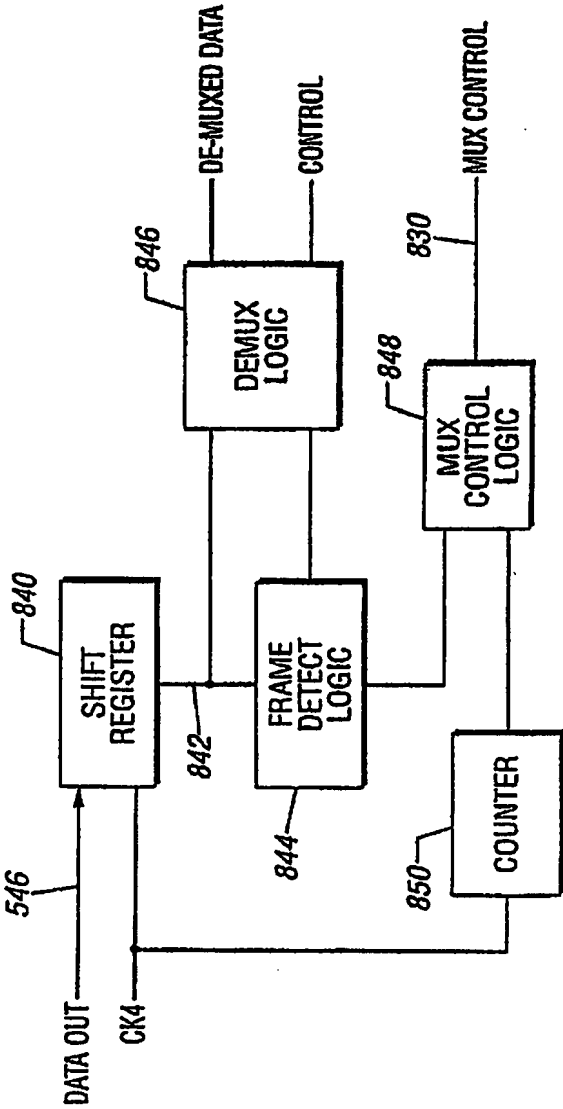
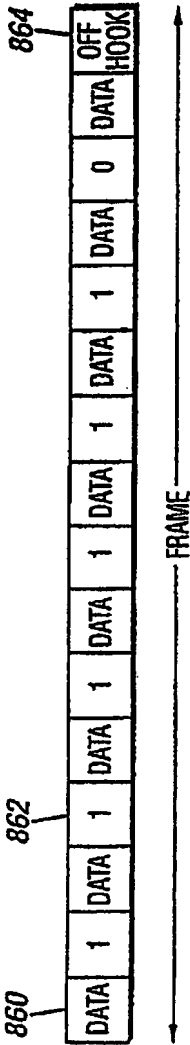
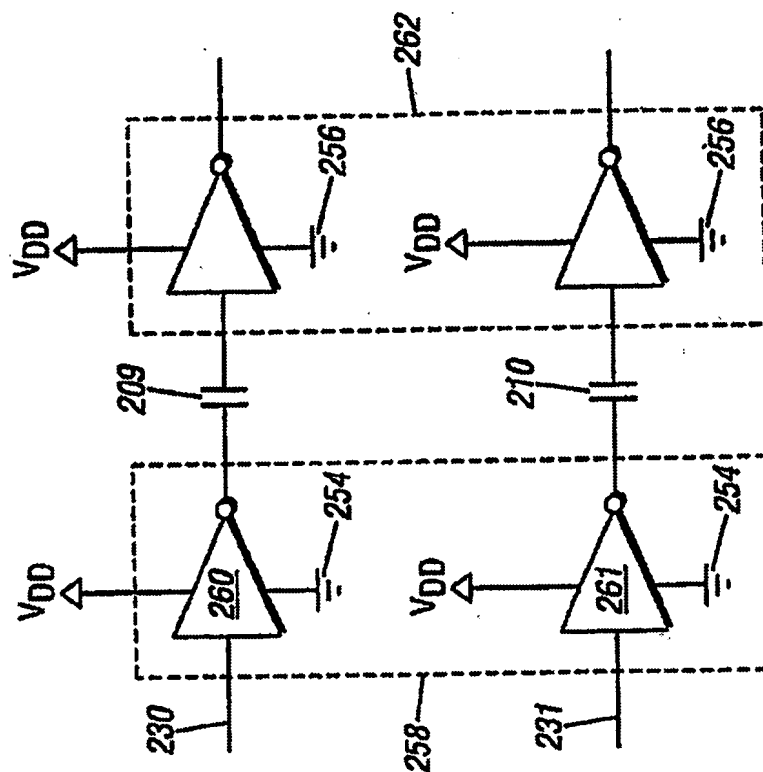


FIG. 12



**FIG. 13B**



**FIG. 13A**

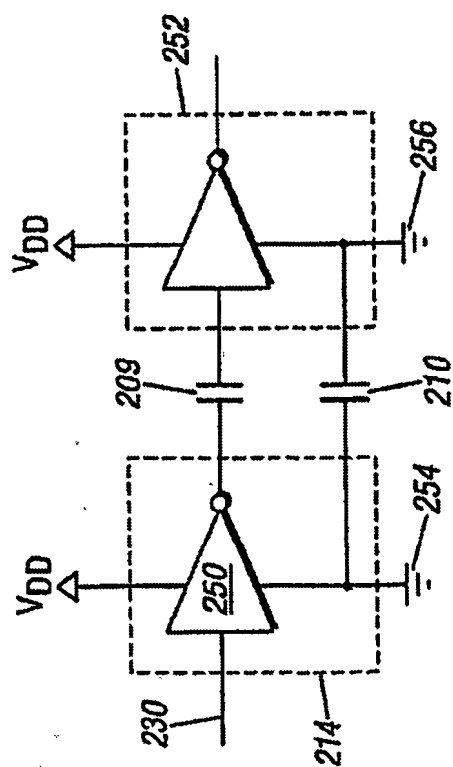


FIG. 14

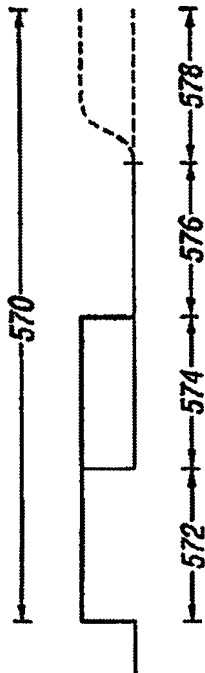
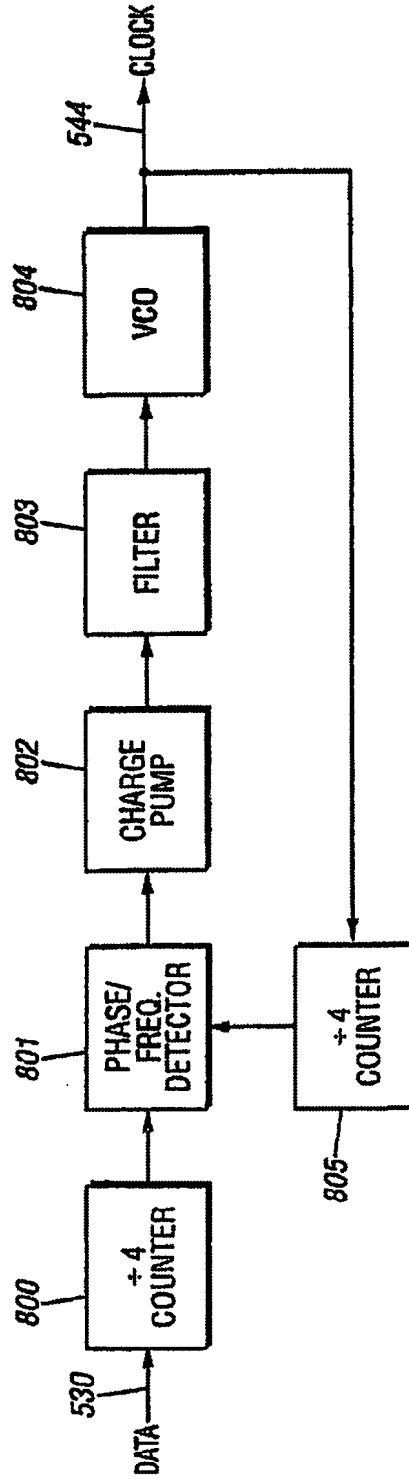


FIG. 15



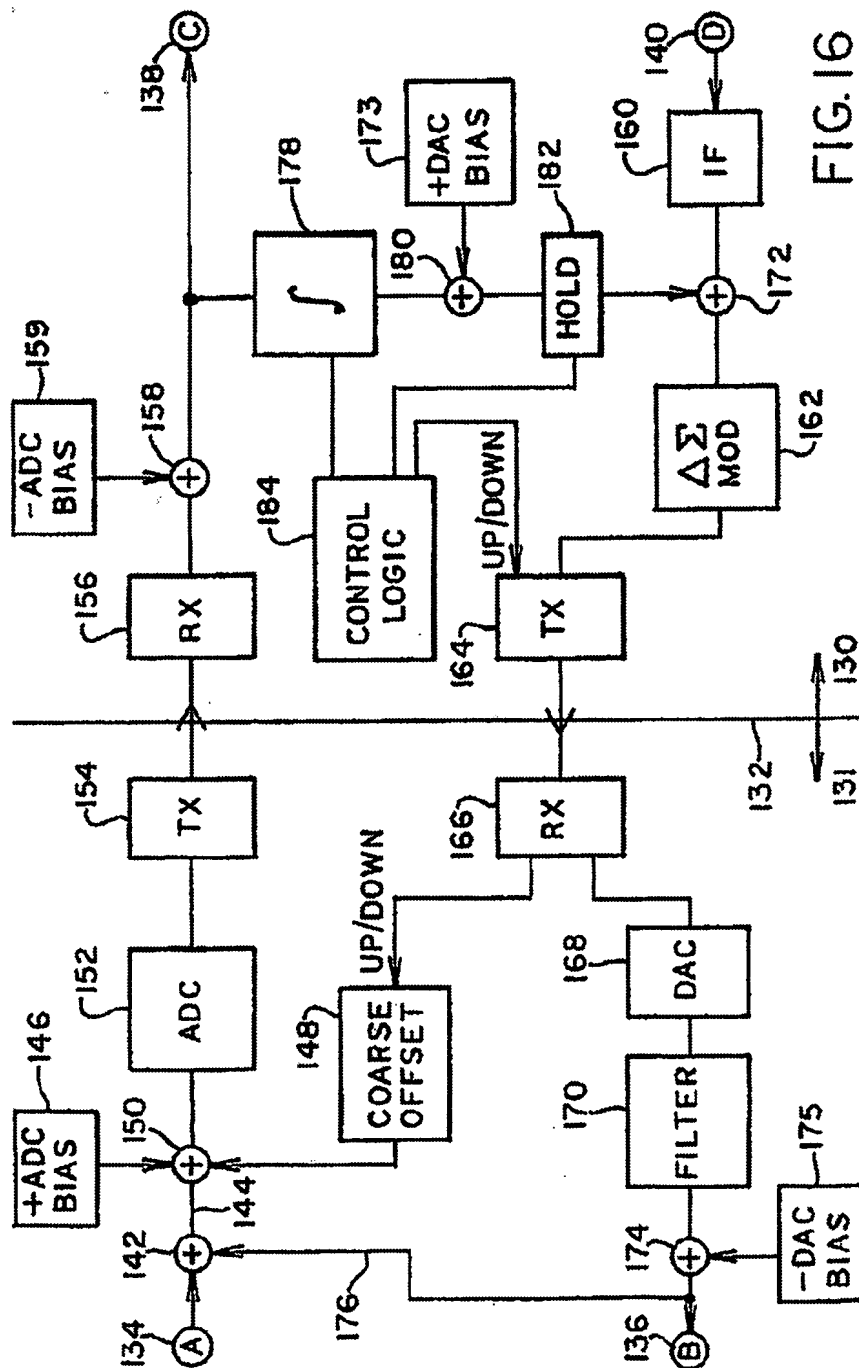


FIG. 16



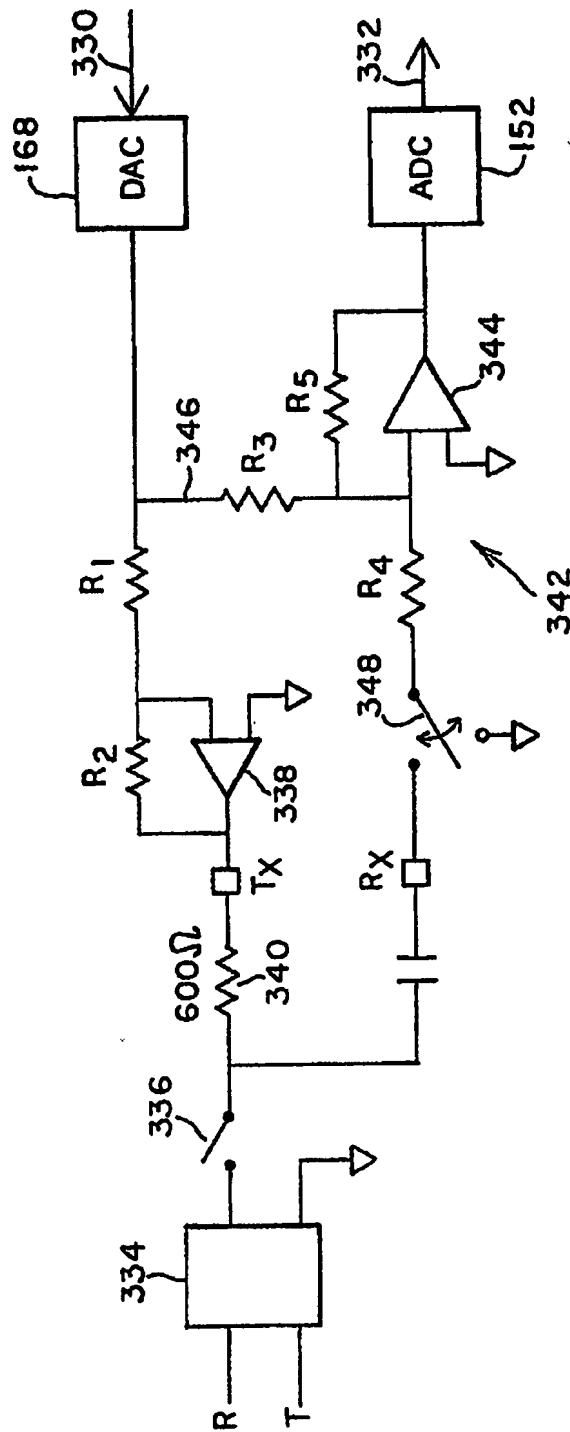


FIG. 17